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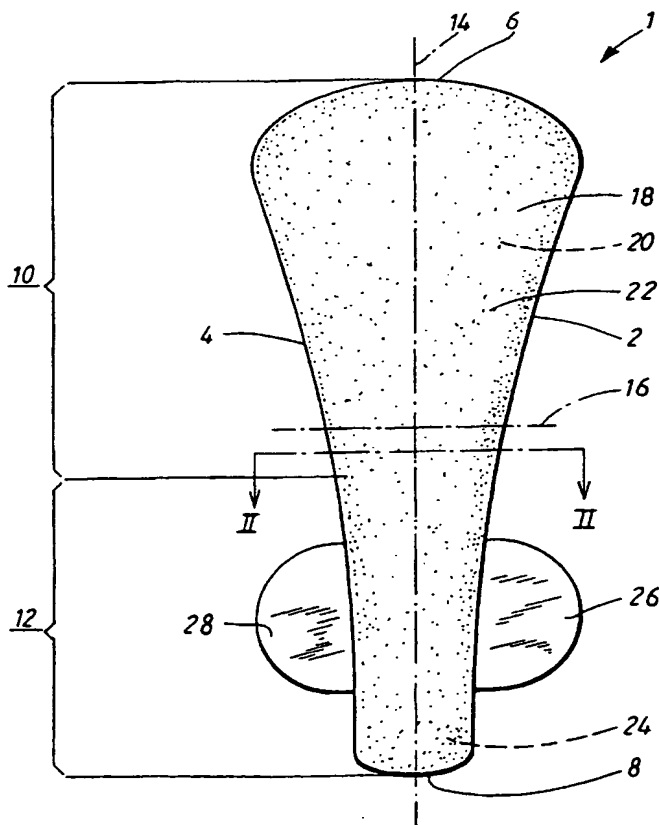
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[Continued on next page]

(54) Title: ABSORBENT ARTICLE FOR USE IN THONG UNDERWEAR



(57) Abstract: Absorbent article, such as a sanitary towel, an incontinence protector or a panty liner, which article is intended to be worn together with thong underwear, has an essentially elongate shape with a longitudinal direction and a transverse direction, an upper side (18) and an underside (20), two parallel long sides (2, 4), two fastening tabs (26, 28; 56, 58; 66, 68), a first end portion (10) intended to be directed forwards on the user and a second end portion (12) intended to be directed rearwards on the user, the first end portion (10) being wider than the second end portion (12), the second end portion (12) of the article being at most 40 mm wide. The fastening tabs (26, 28; 56, 58; 66, 68) are arranged at the long sides (2, 4) of the article at least in the second end portion (12), said fastening tabs (26, 28; 56, 58; 66, 68) being designed for securing the article in the thong.

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## TITLE:

## ABSORBENT ARTICLE FOR USE IN THONG UNDERWEAR

## TECHNICAL FIELD:

- 5 The invention relates to an absorbent article which is designed to be worn together with thong underwear.

Current fashion, with tight-fitting, figure-hugging clothes, has meant that it has become more common to wear so-called thongs, which have a very  
10 narrow crotch area.

As the wearing of thongs has increased, so there has also been a greater need for an absorbent article, such as a sanitary towel, an incontinence protector or a panty liner, adapted to these types of briefs.

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Conventional absorbent articles generally have a rectangular or hourglass shape. However, a rectangular or hourglass-shaped article juts out beyond the edges of the thong and takes away some of the elegance which is the actual purpose of wearing this type of underwear. Alternatively, the article  
20 has to be made narrow enough for the whole width of the article to be accommodated within the edges of the narrowest part of the thong. It has been proposed to design the absorbent articles with a shape matching thong underwear. See SE 9803981-1 and WO 97/39713, for example. SE 9803981 describes an absorbent article which is characterized by the fact that the  
25 width of the rear end portion of the article is at most 40 mm and the long sides of this end portion are essentially curved. Although such an article functions satisfactorily in terms of discretion, it has proven difficult to get the article to fit securely in place in the thong during use.

30 Thus, one of the most important problems to be solved in absorbent articles for these types of briefs is the fastening to the briefs, since the crotch area of the thong is very small. It is also important, for several reasons, for the article

According to a preferred embodiment, the fastening tabs have an essentially rounded contour. According to further embodiments, the fastening tabs are provided with fastening means in the form of fastening adhesive or some type of mechanical fastening arrangement, for example hook-and-loop fasteners, snap fasteners, friction-type fasteners or the like. It is also possible to use combinations of mechanical and adhesive fastening members. According to one embodiment, the fastening tabs are secured against each other. According to a further preferred embodiment, the fastening tabs comprise a soft material, such as a nonwoven, foamed plastic, or the like.

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To allow the article to be secured by the front edge to the briefs too, the front end portion is advantageously provided with a fastening arrangement. Such a fastening arrangement can comprise fastening adhesive or a mechanical fastening arrangement, for example, a friction coating, hook-and-loop materials, gripping members, snap fasteners or the like. The fastening arrangement on the front portion of the article can have a special shape, for example oval, rectangular, lines or the like.

To facilitate correct positioning of an article of the type discussed in the introduction, the article, in a preferred embodiment, can have a raised portion. By this means, it is also possible to achieve an increased absorption capacity of the article and increased security against leakage. According to a further preferred embodiment, the article has inwardly curved side edges, in order to better follow the shape of the leg edges of the thong.

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According to one embodiment, the width of the rear end portion is 15 to 40 mm and preferably 18 to 30 mm. To fit well into thongs, the length of the article is advantageously 150 mm or less.

30 Liquid barriers can also be arranged between the absorbent part of the article and the fastening tabs. Such liquid barriers can consist, for example, of liquid-blocking welds, compressions, liquid-repelling material such as wax,

It is very important that an article having a smaller absorption surface than a conventional absorbent article, which is the case of an article according to the present invention, fits correctly and securely in place in the briefs, since an article which has such a small absorption surface and which moves in the briefs is of no use from the point of view of leakage. According to the invention, the fastening of the article is ensured by means of the fact that the article has long sides which follow the contour of the briefs in the crotch area and which are provided with fastening tabs.

In a preferred embodiment of the invention, the fastening tabs have a rounded contour in order to avoid the chafing and discomfort to the wearer which can be caused by fastening tabs which angled edges. It is also possible to further enhance the comfort of the article by making the fastening tabs from a soft, comfortable material such as a nonwoven, a foamed plastic, or the like. To hold the absorbent article in place in the thong, it is important for the fastening tabs to be secured either to each other or to the thong. This is best done by providing the fastening tabs with some form of fastening arrangement, for example adhesive, hook-and-loop, snap fasteners, friction-type fasteners, or the like.

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To provide maximum protection against leakage, it is preferable that the first end portion of the article can also be secured correctly in the briefs. To give the user as wide a choice as possible as regards positioning of the article in the briefs, a fastening means comprising fastening adhesive or a mechanical fastening arrangement are preferred. This gives the user an article which is easy to secure in the briefs and which can also be moved by a simple manoeuvre, if one feels the first positioning was not correct. To further simplify matters for the user, this fastening arrangement can also have a special shape so that the user can, for example, avoid having fastening adhesive across the entire reverse side of the product.

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In order to reduce the risk of side leakage, it is advantageous if no direct connection exists between the cover or the absorption body of the article and the fastening tabs. By arranging fastening tabs in the form of separate, discrete pieces of material on the article, the join between the tabs and the rest of the article will form a kind of leakage barrier, whereby all fluid transport paths to the fastening tabs will be cut off. Moreover, when the fastening tabs consist of separate pieces of material, the composition and other properties can be chosen freely, independently of the materials forming the cover of the article. Furthermore, it is possible to produce the articles with negligible material waste when the articles are cut out. Due to the fact that the fastening tabs are formed from separate pieces of material which are arranged and attached to the long sides of the article in a manner with the fastening tabs extending towards each other in over the underside of the article, i.e. on the side of the article which during use is intended to be facing away from the user, it is possible to provide an article wherein the fastening tabs, in their initial configuration, are not directed outwardly from the article. This implies that the articles are easy to package since the tabs do not require the provision of a special folding step.

A further advantage by attaching the separate pieces of material or the tabs on the side of the article which during use is intended to be facing away from the user is that the common edge portions of the article and the side tabs can be shaped to fit the curved leg edges of the thong. This implies that the tabs will not wrinkle or deform in other ways as a result of the fastening in the thong something which usually happens with side tabs which are folded around the edges of a pair of briefs. Further, when such an article is arranged in the thong, the leg edges of the thong are guided in between the tabs and the cover material on the underside of the article, i.e. the side of the article which faces away from the user. During use, the article is curved in the longitudinal direction in order to conform to the body of the user. Thereby, tensional forces are created in the tabs, causing these to press against the cover material on the underside of the article and clasping the leg edges of

- Figure 1 shows a sanitary towel according to the invention, seen from above.
- 5 Figure 2 shows a section along the line II-II through the sanitary towel in Figure 1.
- Figure 3 shows a panty liner according to the invention, seen from above.
- 10 Figure 4 shows a section along the line IV-IV through the panty liner in Figure 3.
- Figure 5 shows an article according to an alternative embodiment of the invention.
- 15 Figure 6 shows a section along the line VI-VI through the article in Figure 5.
- Figure 7 shows an article according to an alternative embodiment of the invention, seen from underneath.
- 20 Figure 8 shows an article according to an alternative embodiment of the invention, seen from underneath.
- Figure 9 shows an article according to an alternative embodiment of the invention, seen from underneath.
- 25 Figure 10 shows an article according to an alternative embodiment of the invention, seen from underneath.
- 30 Figure 11 shows an article according to an alternative embodiment of the invention, seen from underneath.

The sanitary towel 1 comprises a liquid-permeable surface layer 22 arranged on that side of the sanitary towel 1 intended to be directed towards the wearer during use, namely the upper side 18, and a liquid-barrier backing layer 24 arranged on that side of the sanitary towel intended to be directed away from the wearer during use, namely the underside 20. Arranged between the surface layer 22 and the liquid-barrier backing layer 24 there is an absorbent body 30. The surface layer 22 and the backing layer 24 are joined in a seam around the absorbent body 30.

- 10 The surface layer 22 can be of any conventional material, for example a nonwoven, a perforated plastic film, or a laminate of a perforated plastic film and a nonwoven.

The absorbent body 30 is preferably made of cellulose pulp. This can be originally in the form of rolls, bales or sheets which, upon manufacture of the sanitary towel, are dry-defibred and converted in fluffed form to a pulp web, sometimes with admixture of so-called superabsorbents, which are polymers having the ability to absorb several times their own weight of water or body fluid. An alternative to this is to dry-form a pulp web as described in WO 94/10956. Examples of other absorption materials that can be used are various types of natural fibres such as cotton fibres, peat, or the like. It is of course also possible to use absorbent synthetic fibres, or mixtures of natural fibres and synthetic fibres. The absorbent body 30 can also contain further components such as shape-stabilizing members, liquid-dispersing members, or binders, for example thermoplastic fibres which have been heat-treated in order to hold short fibres and particles together in a coherent unit. It is also possible to use different types of absorbent foam materials in the absorbent body.

- 30 The liquid barrier layer 24 or backing layer is made of a liquid-impermeable material. Thin, liquid-tight plastic films are suitable for this purpose, although it is also possible to use material which is originally liquid-permeable, but

sanitary towel. The long sides 2,4 of the article have two fastening tabs 26, 28 on the rear end portion. These fastening tabs 26, 28 have an essentially rounded contour and they can have the same combinations of material as the rest of the sanitary towel. It is also possible for the fastening tabs 26, 28 to consist solely of a liquid barrier layer 24 together with a surface material 22. The fastening tabs 26, 28 can also partially comprise a soft material, such as a nonwoven, a foamed plastic or the like. It is advantageous for the material of the fastening tabs to be hydrophobic, so that liquid is prevented from passing from the absorbent body 30 to the fastening tabs 26, 28.

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Figure 3 shows a panty liner 36 according to one embodiment of the invention. The panty liner 36 has a surface layer 22, a barrier layer 24, an absorbent body 30 and fastening tabs 26, 28. The absorbent body can be an air laid cellulose pulp body. The surface layer 22, the barrier layer 24, and the fastening tabs 26, 28 can be made of the same materials as has been described for the surface layer 22, the barrier layer 24, and the fastening tabs 26, 28 in the embodiment of the sanitary towel according to Figures 1-2.

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Figure 4 shows a section along the line IV-IV through the panty liner in Figure 3. On the underside 20 of the panty liner, that is to say on its liquid barrier layer 24, there are fastening members in the form of a layer 34 of pressure-sensitive adhesive covering the entire surface. Alternatively, in the same way as in the sanitary towel in Figures 1 and 2, the fastening member can have another shape, for example oval, rectangular, lines, points or the like. Arranged over the adhesive layer 34 there is a releasable protective layer 38. The protective layer 38 is removed by the user before placing the sanitary towel in the underwear. Other fastening members such as hook-and-loop, snap-fasteners, friction material, gripping members or the like are of course also possible.

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Figure 5 shows an article 42 according to one embodiment of the invention. The article 42 has a surface layer 22, a barrier layer 24, an absorbent body



34 is therefore arranged in three areas 34a, 34b, 34c, with intermediate exposed areas of the backing layer 24. Figures 9 and 11 show absorbent articles where the fastening areas 34a and 34c are arranged only at the wider end portion of the article and on the fastening tabs 26, 28. It is of course possible to conceive of application patterns for the fastening member other than those shown in the figures. For example, the fastening member can be arranged in a continuous point pattern, a net pattern or similar pattern which allows gas and vapour to pass through the backing layer 24.

- 10 The fastening member preferably consists of adhesive, but it can also comprise mechanical fastening arrangements such as hook-and-loop, snap-fasteners, friction coatings, gripping members or the like.

15 Figure 10 shows an embodiment in which a breathable fastening film has been applied across the whole of the underside 20 of the article so that the adhesive coating functions as a combined barrier layer and fastening member.

20 Figures 12 and 13 show a sanitary towel 50 according to an embodiment of the invention. The sanitary towel 50, for instance of the type shown in Figures 1 and 2, has fastening tabs 56, 58 which consist of separate pieces of material. The fastening tabs 56, 58 have edge portions 52, 53, 54, 55 wherein a first edge portion 52, 54 is firmly secured along the long sides 2, 4 of the backing layer 24 on the protruding edge portions of the sanitary towel 50.

25 The difference between the sanitary towel 50 and the sanitary towel 1 in Figures 1 and 2 is that the fastening tabs 56, 58 are arranged such that they from the start extend in over the backing layer 24, past the longitudinally extending centre line 14 so that the fastening tabs 56, 58 at least partially overlap. However, the fastening tabs 56, 58 have a width in the transverse direction of the sanitary towel 50 which is less than the width of the sanitary towel 50. Further, it is evident from Figure 12 that the fastening tabs 56, 58 are primarily arranged at the second, rear end portion 12. In Figure 12 it can

Another advantage with a sanitary towel 50 in accordance with this embodiment is that the fastening tabs 56,58 will exhibit a certain degree of rigidity as an additional effect of the friction material something which will facilitate the application of the sanitary towel 50 in the thong. Naturally, it is possible to arrange the fastening tabs in the reverse order to what is shown in the Figures. Consequently, the fastening tab 56 which is arranged outermost in Figures 12 and 13 can instead be attached to the thong and the fastening tab 58 which in the Figures is attached to the thong can be attached outermost.

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Evidently, it is possible to produce an article of the kind described in connection with Figures 12 and 13 without fastening means since the sanitary towel 50 when worn in thongs will conform to the body of the user and will acquire a longitudinally arcuate configuration. As has been previously mentioned, such longitudinal curving creates tensional forces in the fastening tabs 56,58 on the outside of the thong, whereby the fastening tabs 56,58 press against the thong so that the thong material is clamped between the fastening tabs 56,58 and the liquid barrier layer 24. In this manner, the sanitary towel 50 is kept in place in the thong and the use of special fastening means such as, for instance, pressure-sensitive adhesive, hook-and-loop fasteners, press studs, friction coatings, clasps or the like can be avoided.

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A further embodiment of the invention is shown in Figures 14 and 15 which show a panty liner 60, for instance of the kind shown in Figures 3 and 4. The difference between the panty liner 60 and the one which is shown in Figures 3 and 4 is that it has fastening tabs 66,68 which are arranged in a manner similar to that described in relation to the sanitary towel in Figures 12 and 13. In Figure 14 it can be seen that the fastening tabs 66, 68 extend over a smaller part of the total length of the panty liner 60 than the fastening tabs 56, 58 which are shown in Figure 12. The fastening tabs 66, 68 are arranged substantially only at the second end portion 12. The fastening tabs 66, 68

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A further embodiment of the invention, which is not shown in the Figures, is to arrange the fastening tabs so that they extend in over the liquid barrier layer 24 ending at a distance from the longitudinal centre line 14 so that the second, free edge portions 53, 55 borders on an intermediate exposed portion of the backing layer 24.

It is also possible that the fastening tabs 56,58; 66,68 consist of a laminate comprising a more rigid material. The more rigid material is preferably arranged between two covering layers which are joined at the periphery of the more rigid material. The more rigid material may consist of a sheet of rigid plastic material, cardboard, board or the like.

It is obviously possible to combine the features of different embodiments. Accordingly, the shape of the fastening tabs in Figures 1-11 can, for instance, be applied to articles of the kind shown in Figures 12-15. Furthermore, it is optional to provide the articles with a protrusion such as the one described in connection with Figures 5 and 6.

The invention must not be seen as being limited to the above embodiments. These serve only to illustrate the invention. Characteristics of different embodiments can be combined with each other within the scope of the invention. For example, the different fastening arrangements can of course be combined with each other.

5. Absorbent article according to any of the preceding claims, wherein the fastening tabs (26, 28; 56,58) are arranged to be secured against each other.
- 5 6. Absorbent article according to any of the preceding claims, wherein the fastening tabs (26, 28; 56,58; 66,68) comprise a soft material layer, such as a nonwoven or foamed plastic.
7. Absorbent article according to any one of the preceding claims,  
10 wherein the first end portion (10) is provided with a fastening arrangement (34).
8. Absorbent article according to Claim 7, wherein the fastening arrangement (34) comprises an adhesive fastening member.
- 15 9. Absorbent article according to Claim 7 or 8, wherein the fastening arrangement (34) comprises a mechanical fastening arrangement.
10. Absorbent article according to Claims 7 to 9, wherein the fastening  
20 arrangement (34) has a special shape.
11. Absorbent article according to any one of the preceding claims, wherein the article has a raised portion (40).
- 25 12. Absorbent article according to any one of the preceding claims, wherein the article has inwardly curved side edges (2, 4).
13. Absorbent article according to any one of the preceding claims, wherein the width of the second end portion (12) is 20-40 mm.
- 30 14. Absorbent article according to any one of the preceding claims, wherein the width of the second end portion (12) is 20-30 mm.

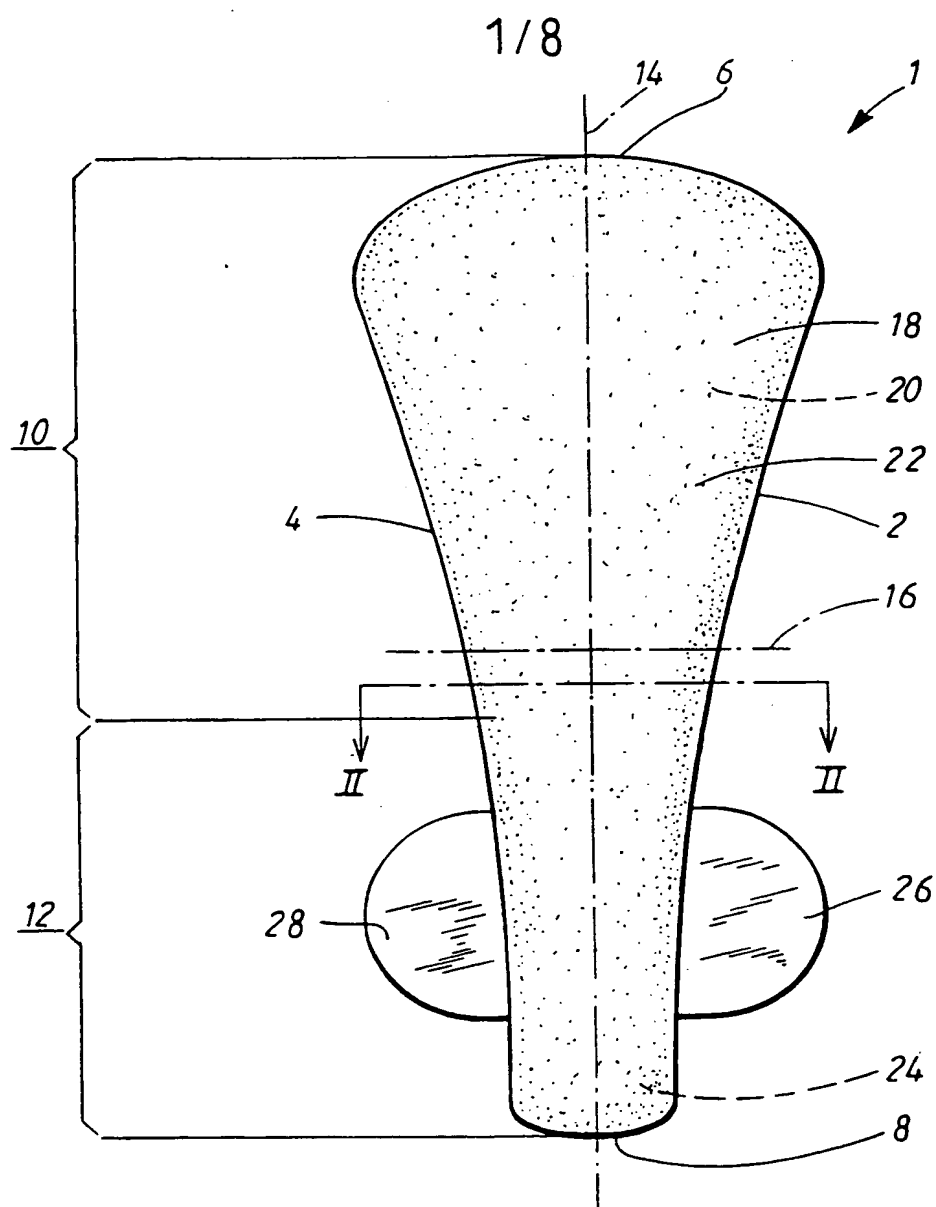


FIG. 1

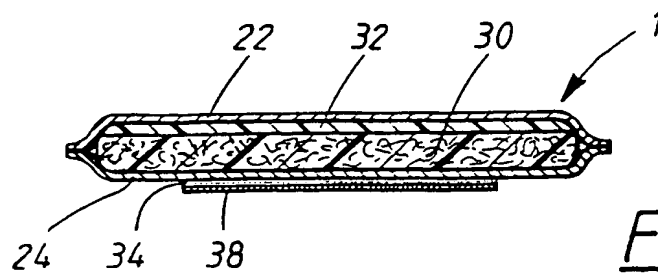


FIG. 2

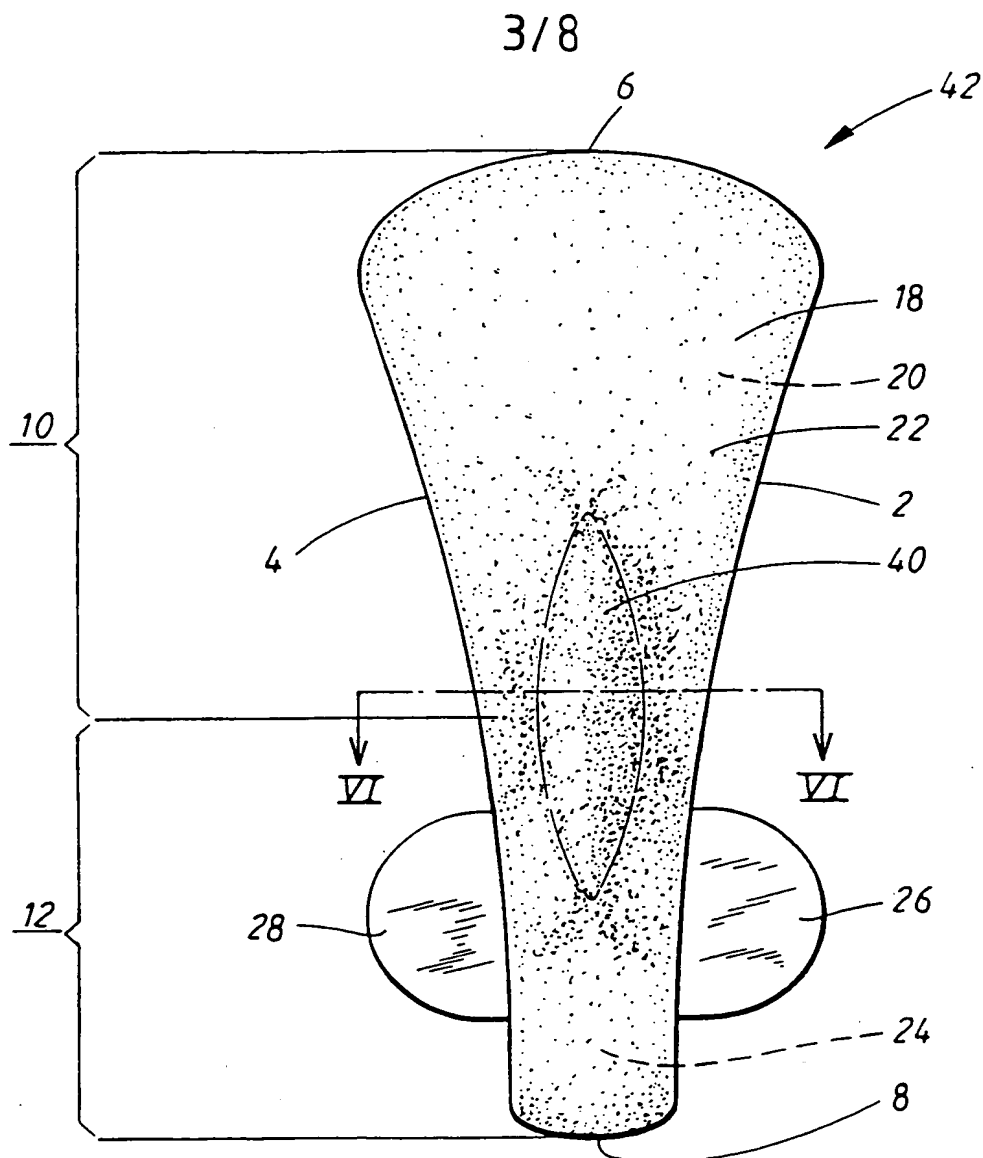


FIG. 5

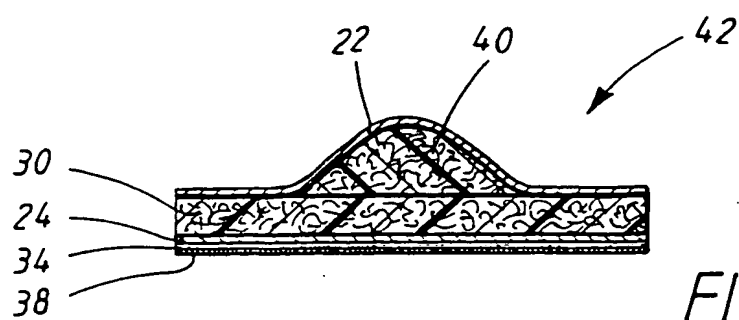


FIG. 6

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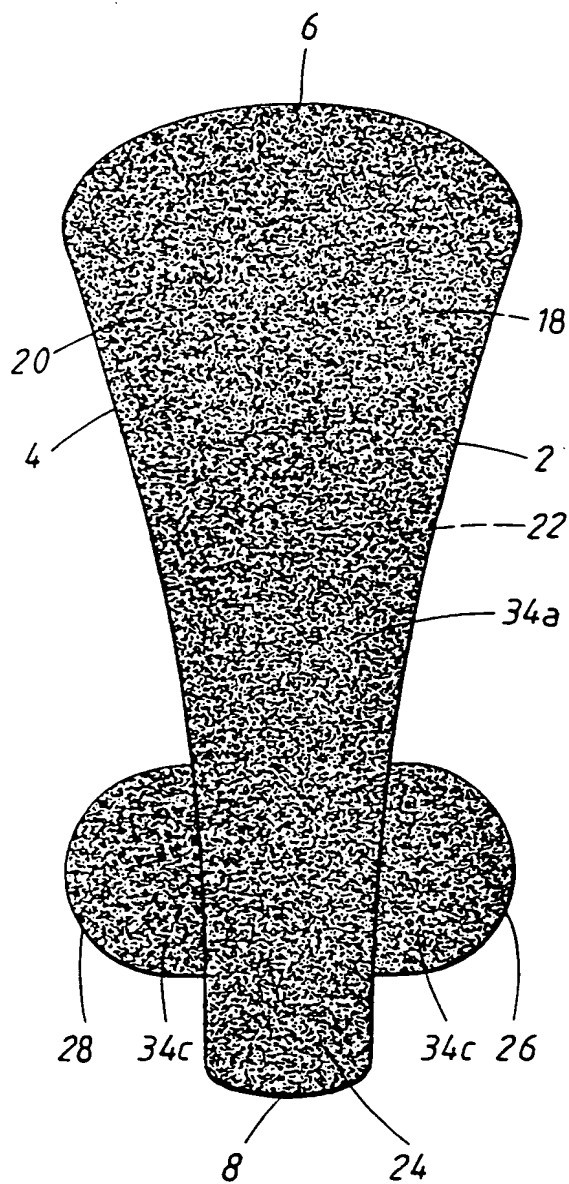


FIG. 10

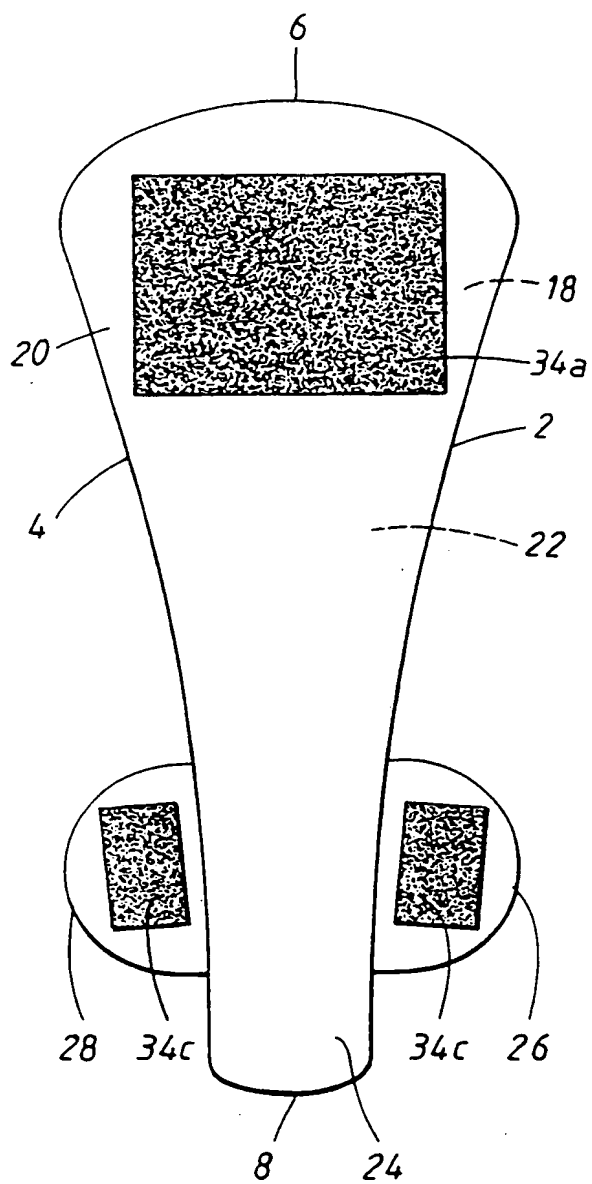


FIG. 9

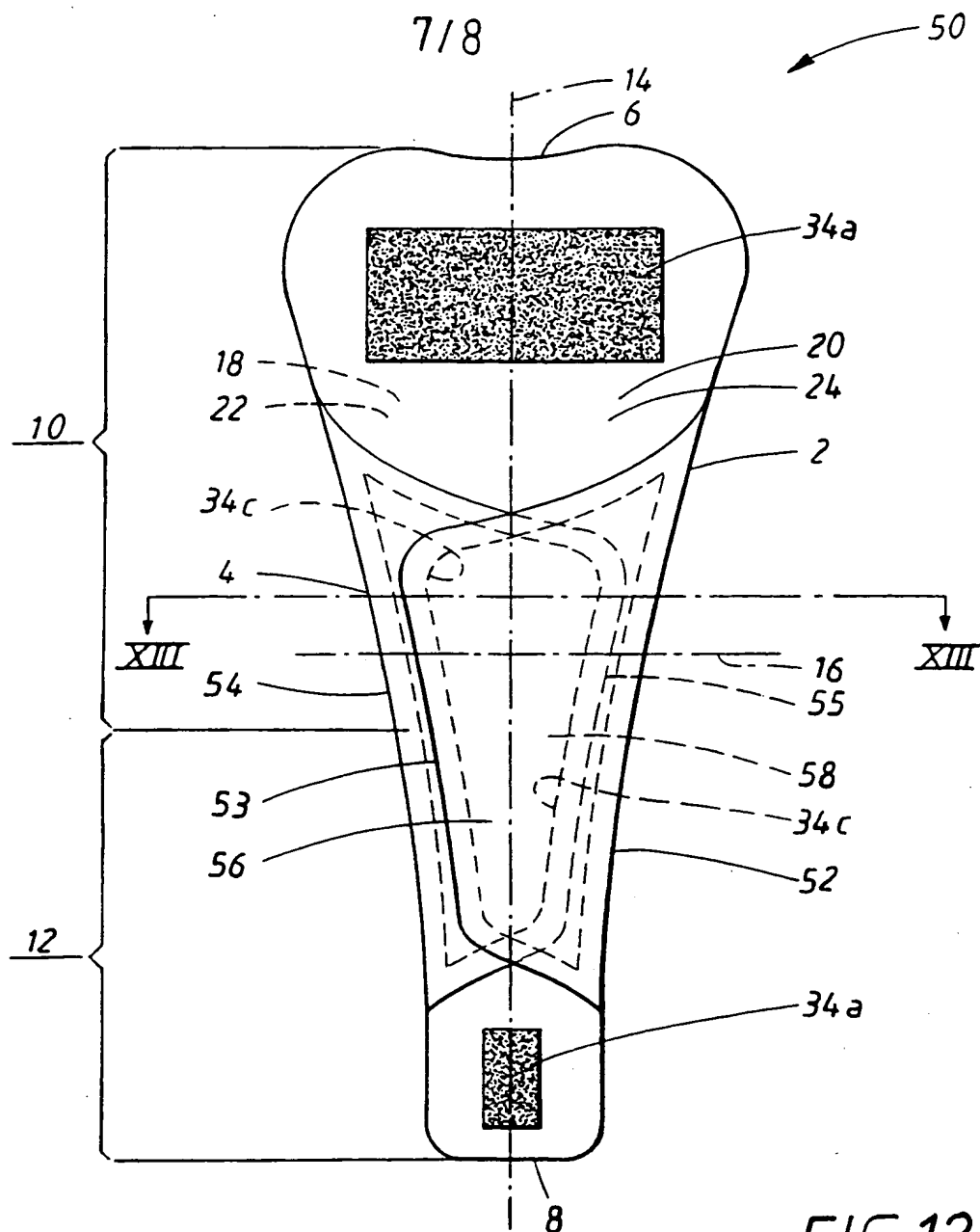


FIG. 12

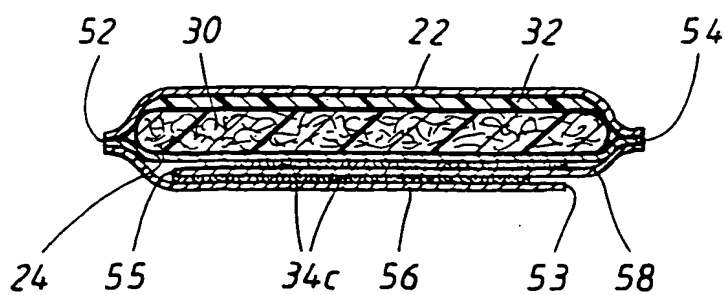


FIG. 13



# INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 00/00948

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: A61F 13/15, A61F 13/58

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 9739713 A1 (DARBY, KAMELA, J.), 30 October 1997 (30.10.97) --	1-21
A	US 5713886 A (DAVID P. STURINO), 3 February 1998 (03.02.98) --	1-21
A	US D394503 S (LINA PERRINI), 19 May 1998 (19.05.98) -- -----	1-21

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Date of the actual completion of the international search

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